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To test the hypothesis that the rise of intellectual eminence in 18th century Scotland is related to educational reforms which occurred during that era, a sample of 375 eminent Scotsmen was selected and relevant biographical information was collected. In addition, the parishes in which the eminent men were either born or educated were investigated, along with a random sample of noncontributing parishes. The findings indicate that various factors were related to the emergence of eminent men, including population growth and concentration, change in the nature of the economy, and a general increase in prosperity. Although educational reform and innovation at the elementary level and extension of university education were also found to be significantly associated with eminence, degrees of eminence and level of educational achievement were not related. In general, those areas which diverted a portion of their resources to educational reform produced a significant proportion of the eminent Scots in the 18th century. (Author/JH)

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AN HISTORICAL CASE STUDY OF THE EFFECT OF EDUCATIONAL REFORM ON AN UNDERDEVELOPED AREA: SCOTLAND IN THE EIGHTEENTH CENTURY

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Northridge, California
April, 1969

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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Preface

This study is a collaborative effort of four individuals, myself, Martha Barcus, Bonnie Bullough, and Lucy Kluckhohn.

SUMMARY

This study was an attempt to explain why so many eminent men appeared in eighteenth-century Scotland, a country not previously noted for its intellectual contributions. It was hypothesized that the main reason for this was because of educational reform which had taken place in eighteenth-century Scotland. To verify this hypothesis a sample of eminent Scotsmen was selected. Eminence was determined primarily in terms of intellectual accomplishment, and there was an attempt to include as many eminent Scots as possible. These were then broken down into first, second, third, and fourth rank eminence. The next step was to gather biographical information on the 375 individuals selected for study through an examination of the source materials. Based on this material a questionnaire (which also served as a codebook) was prepared. Both primary and university education proved significant in producing intellectual achievement, but perhaps the most significant finding was the number of eminent men who had attended a university.

The next step was to examine the parishes in which the eminent men were either born or educated (on primary level), plus a random sample of non-contributing parishes. In all a total of some 246 parish units were examined,

about 25 per cent of the estimated 1,000 which existed at that time. Various factors seemed to help determine why certain parishes produced so many eminent men including the growth in population, a change in the nature of the economy, increase in prosperity, and improvement in the elementary schooling. A highly significant factor was the reform of elementary schooling.

Parishes seemed to get the kind of education they paid for, and those parishes which instituted reforms (and these cost money) were more likely to produce eminent men. Educational reforms, however, had to be carried out at all levels, and even more significant than elementary education reforms were those at the university level.

I - INTRODUCTION

Scotland during the seventeenth century was intellectually and socially one of the more backward areas of Europe. Agriculture was primitive in aims and methods, the rich fishing potential was only superficially exploited, and industry was limited. The people existed in a near subsistence economy with little trade or commerce. The country was also the scene of considerable religious controversy, and clan warfare was rampant. Though many of the people spoke Gaelic and the majority a Scots dialect of English, both of these were frowned upon. On paper, however, Scotland had an effective system of education. John Knox, the Scots religious reformer of the sixteenth century, had advocated establishing schools in every parish, and the Scots Parliament had passed various (and contradictory) acts in 1633, 1646, 1661, and 1696 designed to accomplish this. The ideal, however, was far from reality, and even in the richer shires in the seventeenth century such as Aberdeen, Forfar (Angus), and Lanark, the majority of parishes lacked established schools. Though many Scotsmen still managed to go to school, few of them in the seventeenth century managed to leave much of an imprint outside of the world of theology. The universities, hampered by political change, religious

strife, financial insecurity, and institutional conservatism, produced few men with more than a local reputation.

Yet by the end of the eighteenth century, Scotland had forged ahead in the realms of scholarship and learning, science, medicine, imaginative writing, creative art, and technology. Her universities were known throughout Europe (and America), and her poets, novelists, artists, philosophers, historians, scientists, physicians, engineers, were among the most innovative and prominent in Europe. Edinburgh, the capital of Scotland, came to be known as the "Athens" of the North, and was totally rebuilding itself. What caused such a change? Several factors seem to be at work.

Of considerable importance was the Act of Union adopted in 1707 which united the two kingdoms of Scotland and England into one under the title of Great Britain and provided for one parliament. Though the Scots gave up their independence, the Union opened up the trade and navigation of England to Scotland. The Scots were not entirely happy with the Union (they thought they were under-represented in the Parliament), and there were rebellions in 1715 and 1745, but the two kingdoms gradually learned to live together. One of the immediate results was to make profitable the rearing of cattle for export to England. This encouraged the search for more effective fodder crops and led to the widespread introduction of turnips. Other new crops were also intro-

duced such as potatoes, and new types of grasses. Agricultural innovation proceeded rapidly with the establishment of effective drainage, crop rotation, and reforestation projects. By 1723 a Society of Improvers in the Knowledge of Agriculture in Scotland had been formed and words such as "improver" and "improvement" became a standard part of the eighteenth-century agricultural vocabulary.

Domestic industry also underwent expansion at the beginning of the eighteenth century, first the linen industry, and then as trade with the Americas mounted, the tobacco industry. To fill the ships going to the colonies to fetch tobacco, Scottish industries turned to making Paisley cloth, glassware, hats, gloves, and boots. Banking became a major industry giving the Scots a source of capital to expand further. By 1750 Scotland can be said to have entered the industrial age, and the industrial revolution which had originated in England became well established in Scotland. The coal and iron industries grew in importance, manufacture of cotton textiles became established, and new industries such as paper making, chemicals and soap making, brewing and distilling became prominent. Fishing also was revolutionized and became a major cash crop. Transportation was improved, and many of the cities and towns of Scotland rebuilt themselves.

It has been argued that Scotland was able to enter so rapidly into the industrial revolution and to adapt new techniques in other fields because of the wide diffusion of education among the people, and this made them adaptable workers and good learners. Educational reform also underlay the broad base of intellectual, literary, technological, and scientific achievement of the time. While there were no further parliamentary acts in the eighteenth century (the Scots parliament was dissolved with the Union), a careful review of the sources indicates a gradual growth in conformity to the earlier provisions establishing parish schools. By the middle of the eighteenth century some of the shires (or counties) had a school in almost every parish. The most backward area of Scotland, the Highlands and Islands, were also assisted by the growth of the Society in Scotland for Propagating Christian Knowledge. This group, founded in 1709, was primarily interested in converting Catholics and stamping out Gaelic (which it equated with Catholicism), but by the middle of the century it had recognized the need of teaching in Gaelic. The Society gave special impetus to education in the Highlands. As the Society realized the problem of educating people in those backward areas of Scotland, it began to establish more technical schools, and in 1738 the first spinning school for girls was established. Since the Society's work was supported

by contributions of the faithful, its work was materially benefitted in the aftermath of the Rebellion of 1745, when the Commissioners for the Forfeited Estates gave additional assistance in establishing schools. Part of the income from estates seized by the crown from rebellious chiefs was to be used to establish schools.

Within the school systems there were important reforms. Perhaps most often mentioned in standard histories was the increasing emphasis put on English and the corresponding decrease on Latin. Since, to many of the Scots, English was almost equivalent to a foreign language, the requirement that the pupil know both Latin and English put nearly impossible demands upon the local schools. Though grammar schools (emphasizing Latin) continued to exist in the larger towns, other subjects such as French, geography, drawing, mathematics, physics, mensuration, navigation, and bookkeeping came to be accepted into the curriculum. Parish schools as a whole concentrated on English and only a few students and fewer masters knew Latin. There was also a growing tendency to have professional teachers within the parish school, that is those people who intended to teach the rest of their lives rather than going on to study for the ministry or medicine. Though the teachers were badly underpaid, a number of dedicated teachers appeared in the eighteenth century. Textbooks were revised and new teaching methods were at least talked about if not utilized. New

type schools, known as academies, utilizing a "modern curriculum" were also established.

Within the university there were also major changes. One of the most important was the abolition of lectures in Latin. The first professor usually said to have lectured in English instead of Latin was Francis Hutcheson at Glasgow in 1730. His example was soon followed by others. Equally important was the establishment of fixed subject matter professorships. Earlier the regency system required that students follow a particular master through their several years of study. With the change, special chairs were established to provide for new subjects at both Edinburgh and Glasgow, and for the first time professors could become effective specialists. New texts were also developed.

What effect did these educational reforms have upon Scottish development? While the historian in the past has claimed that they had important implications, there has been no agreement on just how much effect they had. It was to try to answer this basic question that this research project was begun. The major hypothesis tested in this study was that the educational improvements in an underdeveloped Scotland was an important fact in its emergence as an intellectual force in Europe.

II - METHODOLOGY

Men eminent enough to be listed in standard reference works in the history of science, medicine, engineering, literature, and art, and who were born, educated, or taught in Scotland served as the base of the sample. In addition the Dictionary of National Biography was surveyed for eighteenth-century Scotsmen (born before 1785) who achieved eminence in intellectual fields. This qualification eliminated most of the military leaders or politicians whose accomplishment in reaching high office was enough to include them in the Dictionary of National Biography. If, however, the general or politician was associated with some particular accomplishment, such as an innovation in tactics, or was noted for his writings, he was included in this study. From such surveys a sample of 375 men (and women) was drawn. Only eighteen of the final sample were not included in the Dictionary of National Biography.

The next step was to gather biographical information on the various individuals for carefully selected items. Some of this was available in the Dictionary of National Biography but in most cases it was necessary to dig back into primary sources and even then in some cases the information could not be found. A copy of the biographical information sheet is attached. One information item, the

question of legitimacy, proved impossible to ascertain in most cases. Other items perhaps deserve some explanation.

Scotland was a Presbyterian country, and the established school system was based on the Presbyterian Church. Religion thus becomes an important aspect of the educational process, and information about subject's religion was included. Social class is important in today's world and it was hypothesized that it would have been important in the eighteenth century also. To try to establish social class, the researcher attempted to find the father's occupation and the mother's background. Also important was place of schooling, since education is the key to the whole project. The primary school could be located in a little over 75 per cent of the cases. Only six (1.6 per cent) had no known schooling. The subject's own social standing and occupation as an adult were sought in order to determine whether a change in social status occurred at the same time that he became eminent. Information about trouble with law was included to determine whether eminence might be associated with socially deviant behavior. Children of subject were listed to determine whether eminent people had eminent children.

We attempted also to find information as to the population of the parish where the subject went to school, the geographical size of the parish, the population of the shire (or county), and similar information. An attempt was also

made to break down the category of fame achieved by the individual in both general and specific areas. The amount of information available on the individual was noted. Unfortunately the information on about sixty-three persons (16.8 per cent of the subjects) was meager and incomplete. On the other hand, 173 or approximately 46 per cent are relatively complete. The remainder are somewhere in between.

The next step was to examine in depth the parishes where eminent individuals were either born or went to school. This too was based on source materials and was designed to indicate the growth of the parish, its type of economy, the number and variety of churches, the stipend of the minister and school master, the number and types of schools, and so forth. These data were then put into a historical questionnaire (which also served as a codebook) as indicated in the appendix. To verify the findings further, a random sample of some seventy-two non-contributing parishes was included as a control group, utilizing the same kinds of information as on the contributing parishes. These two groups were then compared. Various cross tabulations were made in an attempt to explain what the significant factors were in the rise of so many Scotsmen to eminence.

III - FINDINGS: INDIVIDUAL ACHIEVERS

Of the 375 individuals in the study, parishes of birth could be identified and located for 371, Of these, 208 (slightly over 55 per cent*) were born in the central part of Scotland, the belt stretching from Glasgow to Edinburgh. One hundred subjects (27 per cent) were born in the highlands and islands and 51 (14 per cent) in the lowlands. Some twelve subjects (3 per cent) were born in England or elsewhere.

One of the hypotheses of the study was that there would be a greater chance for an individual to achieve intellectual eminence if he was born in an urban or suburban parish. It was assumed that the schools in these areas would be better, and there would be greater opportunities for advancement. This hypothesis was verified. Only twelve individuals (3 per cent) were born in parishes with less than 500 people. The median population of the parishes in which eminent people were born was approximately 2800 people, much larger than the average for Scotland. The importance of the urban parish is emphasized by the fact that 117 (31 per cent) of the sample were born in parishes with over 8,000 people which in Scotland at that time would establish them as major cities.

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* All percentage figures in this report are rounded off to eliminate fractions.

Population size per se (except in the urban parishes) is not, however, the only index of rural isolation. To give a better picture of the type of parish which contributed eminent men, the parish was set into the context of the shire or county, the next larger governmental unit. Only 11 individuals (3 per cent) were born in shires with less than 5,000 population, and in fact the total number born in shires with under 10,000 population was only 25. The population median for the shire in which eminent people were born fell between 60,000 and 80,000. Since Scotland in the eighteenth century could be classed as an overwhelmingly rural country, the growing eminence of Scot intellectuals during the period might in part have been due to the urbanization taking place. This subject is discussed in the data on individual parishes.

Another indication of the nature of the parish is the geographical size, i.e. the number of square miles included in its confines. Since most parishes at best only had one parish school, it was assumed that the compact, and therefore more densely populated parishes would contribute a greater number of people of eminence. This again proved to be the case since parishes with less than four square miles contributed some 107 individuals (28 per cent). The median size of the parish in which eminent people were born was under 10 square miles. On the other hand, some parishes included over 35 square miles.

MINORITY STATUS

Since the parish school was really a parochial school, more or less limited to church members, it was assumed that dissenting minorities would be handicapped in achieving eminence. This is because Scotland in the eighteenth century was a religiously divided country in which Presbyterianism was the established religion but where there were numerous adherents to Catholicism, Episcopalianism, and to various kinds of dissenting Protestantism. None of the achievers in the study could be identified as being affiliated with Judaism. Actual religious affiliation of the parents could only be identified in about 55 per cent of the cases although we think it is safe to assume that the overwhelming majority of those remaining unidentified belonged to the established Presbyterian Church. Only three individuals (less than 1 per cent) of the sample were born into Catholic homes, and since Catholics were the most despised and persecuted minority, this might be come indication of the difficulties that a member of that faith had to face. There were Catholic schools in various parts of Scotland during the eighteenth century, but these were covert or undercover institutions, designed primarily to prepare priests to serve the Catholic population. The barriers to Catholics in eighteenth-century Scotland were severe, and although becoming a priest was a noteworthy achievement, it is understandable why so few of them could be classed as eminent in the terms defined in this study.

Episcopalians, another religious minority, had a much easier time, particularly in the areas around the royal garrisons. Moreover, in English terms, they were more socially acceptable than Catholics even if their Presbyterian neighbors might look askance. The Episcopalians were probably of higher social standing than the average Scotsmen. Still when all this is said, only 20 individuals (5 per cent) were born into Episcopal families. Double that number, some 40 individuals (11 per cent) were born into various kinds of dissenting Presbyterian or Protestant families. This might be because in some areas of Scotland the parish schools were in effect run by the dissenting groups.

SOCIAL CLASS

Although social class background is known to be a crucial variable in predicting contemporary life patterns, it was interesting to find out how it operated in the eighteenth century. It was possible to find this information about all but 36 individuals. Quite surprisingly there were comparatively few people in the sample born into noble classes; it seems that the nobility tended to discourage the type of schooling associated with intellectual achievement, perhaps because nobles already had established a secure position in society. As indicated in Table 1, 8 per cent of the subjects whose social class could be iden-

tified were of noble origin. On the other hand the non-noble upper classes contributed way out of proportion to their numbers. Some 55 per cent belonged to the upper middle class, i.e. they were engaged in the high status professions, were affluent businessmen or large non-noble landowners or operators. The lower classes to which the bulk of the Scotsmen belonged contributed only 10 per cent. While this is more than the noble class contributed, the finding suggests that opportunities for common men to attain eminence were limited. The lower middle class, including skilled artisans, local teachers, and yeoman farmers contributed 27 per cent.

Table 1. Social class backgrounds of the eminent eighteenth-century Scotsmen (n = 339)*

Class	Number	Per cent
Nobility (Upper Class)	26	8%
Upper-middle	186	55%
Lower-middle	92	27%
Lower	35	10%
	339	100%

* Social class origins on the remaining 36 could not be identified.

As one surveyed the social class background of the eminent achievers, it became apparent that in part our data hinted at something which we had not anticipated. Some further investigation into sources, but for which we have little statistical data, seemed to indicate that eminence was not so much a sudden leap from one generation to another but rather a slow building process taking place over several generations. Our data did show that an unusually large number of achievers were sons of ministers, classified as upper middle class in this study because of their high status in eighteenth-century Scotland. The ministry itself was open to all able men who had achieved the necessary education, and bright boys of lower class backgrounds were encouraged to become ministers. Though we do not have the actual statistics, a survey of the sources indicated that many of the minister fathers of the subjects in the studies were not sons of ministers but had moved up from families identified with lower strata occupations.

Historical novelists have often emphasized that the way in which a would-be achiever could move into a higher social class was to marry above his own ranking. In point of fact, however, some 126 individuals (34 per cent of the total sample) married below their status while only 40 (11 per cent) could be said to have married above. An even greater number, 48 (13 per cent) simply never married at

all, while in an almost equal number of cases we found it impossible to determine either marital status or the social standing of the spouse. Obviously women could change social classes through marriage, but comparatively few men utilized this method.

Achievement, instead, turned out to be the way to change social class, and the overwhelming majority of the subjects had either a higher social class (141 or 38 per cent) or the same social class (178 or 48 per cent) as their parents.

FAMILY BACKGROUND

One of the things which psychological literature suggested that we should investigate was the nature of the home environment of the achiever. Obviously this becomes an impossible task in terms of the surviving source materials of the eighteenth century but there are several hints which can be gathered from various kinds of biographical information. Does a child raised by his own parents tend to be a greater achiever than one shunted off to an institution? Complete answers to such questions simply cannot be had from the historical data and this study made no provisions for cross tabulation with non-achievers. Moreover we could get data on the immediate family situation of only about half of our sample. Still the overwhelming majority of these were raised by both parents and most of the rest

by one of their parents. Only three individuals (1 per cent) were raised in institutions while 19 (4 per cent) were raised by other relatives. This emphasizes the importance of the home in intellectual development.

Many investigators into the nature of achievement have been struck by the place in the family of the achiever, and usually it seems that either the eldest or the youngest child has the advantage. Because such assumptions have not been verified historically, at least in the Scottish context, there was a determined effort to establish place in the family of the achievers. Somewhat to our surprise we were able to get such information on a little over sixty per cent of the individuals (227). Not surprisingly the results tended to verify what has been determined by contemporary studies. Some 109 individuals were either the eldest, the eldest son (there might or might not have been older daughters) or the eldest daughter (there might have been older sons). In effect nearly fifty per cent of those about whom we could gain information were either the eldest child or the eldest child of a particular sex. Conversely 48 were either the youngest child, the youngest son, or youngest daughter (there might or might not have been younger children of opposite sexes). Again nearly 25 per cent of the sample about whom we could gain information was either the youngest child or the youngest child of a particular sex. The rest of the children were somewhere in

the middle. Some 24 persons were only children while eight came from families of thirteen or more children. The median family size in the sample was five children.

OCCUPATION AND ASSOCIATION

It was known that Scotland in the eighteenth century was a growing and expanding country in which new types of occupations were appearing. It was hypothesized that instead of following the occupation of one's father as had been the custom in preceding generations, achieving individuals would seek new or different opportunities. Though it was impossible to identify the occupation of the father of 44 individuals in the sample (12 per cent), it seems clear that the majority of achievers entered into different occupations. Some 225 individuals in the sample (60 per cent of the total) did not follow the occupation of their father. While the figures are perhaps not so significant to today's reader, when it is remembered that such cities as Glasgow had more or less closed guild systems in which it was the custom for the son to follow the occupation of his father, it becomes apparent that this figure has to be regarded as a radical departure from the past, although it might only mark the growing urbanization. Those who did follow their fathers' occupations did so in such fields as medicine or the ministry which were already high status occupations.

From previous research it was known that eminent people in Scotland tended to associate with one another, to cluster together in various kinds of groupings. It was hypothesized in this study that such clusters would exist but the extent to which eminence gave rise to eminence was somewhat unexpected. In fact in almost every case where we had adequate information there was some close relationship with someone else in the study: even more surprising was the fact that some 25 per cent of the subjects were in some way related with someone else in the study. If sources were more adequate or even if we could have spent greater time pursuing individual leads, this percentage undoubtedly would have increased since relationships appeared more often on the studies judged fully complete than those which were less adequately filled in.

ADULT ACHIEVERS

The upward mobility of the achievers was more or less anticipated. We did not, however, expect to find some of the other changes, such as the change in religion. The religion of only about half the subjects (actually nearly 55 per cent) could be clearly identified as an adult, and a little over half of these belonged to the established Presbyterian Church (110 or 29 per cent of the total sample). Though undoubtedly the overwhelming majority of those whose

religious affiliation was not identified were at least nominal members of the established Presbyterian Church, the unexpected fact is that 96 individuals (26 per cent of the sample) were affiliated as adults with various dissenting Protestant churches or with the Episcopal or Catholic Church. This marks a significant change from childhood religion to that of adult, and since the established Presbyterian Church was the most socially acceptable church, this finding indicates somewhat of a conflict with the value system of the time.

This conflict is also emphasized by the number of individuals who ran into difficulty with authorities. Actually 63 (17 per cent) were identified as being in some kind of trouble as an adult for political, religious, or economic reasons. Several were even charged with felonies.

EDUCATIONAL BACKGROUND

The main hypothesis of this study was that education in itself was one of the keys to explaining achievement in eighteenth-century Scotland. This hypothesis was verified. Only six persons, less than 2 per cent of the subjects, had no formal schooling although we were unable to identify just what kind of elementary schooling another 105 (28 per cent) had. Forty-six individuals (13 per cent) were educated.privately, either by their parents, a tutor, or through some

other kind of similar arrangement. The rest had some kind of formal elementary education either in a parish school or in a town grammar school.

The significance of education becomes even more apparent when we examine the length of formal schooling including university. On only forty-nine subjects were we unable to get adequate information on formal schooling. Table 2 shows the educational background of the subjects in the sample. When university is included with elementary

Table 2. Educational attainment of eighteenth-century eminent Scotsmen (n = 326 persons).

Amount of Schooling	Number	Per cent
No formal education	9	3%
Known to have attended school but not university	69	21%
Some university training	121	37%
University graduate	127	39%
	326	100%

schooling only nine individuals (3 per cent of those for whom schooling is known) did not formally attend some kind of educational institution. A high proportion of the sample turned out to be university graduates or attended the university for part of their training. As can be noted in the table, 248

individuals were affiliated with a university. Put another way, we can say with certainty that only 71 persons in the sample (19 per cent) did not attend the university. University education seems to be an important prerequisite to eminence.

At the same time it should be pointed out that the very method of selecting the sample undoubtedly put greater emphasis on university training than on non-university training. This is apparent by the general categories of fame into which the subjects of the study fell. Success in medicine, law, and religion was, even at this time, closely

Table 3. Category of fame (n = 375).

Category	Number of individuals	Per centage
Medicine and science	80	21%
Law	22	6%
Religion	23	6%
Politics and Military	17	5%
Letters (literature et al)	87	23%
Engineering and technology	20	5%
Fine Arts	47	13%
Business	9	2%
Other or several categories	70	19%
	375	100%

correlated with a university education. This was not so much the case in other fields and even in medicine, surgeons were not usually university graduates; neither were the scientists who are lumped in with medicine.

Still in all areas of achievement there was a significant correlation between length of schooling and eminence. For example, 73 per cent of those in medicine and science were university graduates, and an additional 13 individuals (17 per cent) had some university training. In law, 18 individuals (95 per cent of those achieving eminence in that field) attended university although only two (11 per cent) are definitely known to be university graduates. An equally high percentage of those achieving eminence in religion attended university (95 per cent), although only 62 per cent are known to have actually graduated. The percentages decline in other fields but 87 per cent of those achieving eminence in letters attended the university, and 43 per cent of the engineers and inventors. In this last field, however, those who had only attended elementary school outnumbered the university-trained person. This is also true in arts and business. In fact in the category of Fine Arts four individuals (10 per cent) had no schooling. In sum, however, advanced education came to be a significant factor in achieving eminence in eighteenth-century Scotland, even in those fields not usually identified as requiring a university degree.

The length of schooling is not so significant when rank of eminence is examined. At the completion of the study we tried to categorize our subjects according to levels of eminence from one to four with first rank being people with more or less world-wide reputations such as Adam Smith, Sir Walter Scott, or James Watt. A total of fifteen individuals (4 per cent) were classed as first rank, 62 persons (17 per cent) as second rank, 185 (49 per cent) as third rank, and 113 (30 per cent) as fourth. The decline in numbers of those classified as fourth rank eminence is undoubtedly due to the fact that there was more hesitation to include such people, but the particular individual either had impressed the editors of the Dictionary of National Biography (DNB) or one of the authors of the general surveys from which we drew our sample. Actually our rating of eminence turned out to have some correlation with the number of inches in the DNB (Pearson's Contingency Coefficient, $r = .56$), but our standards were different enough that we felt our own system of classification was needed as well.

As Table 4 indicates, a smaller percentage of the first rank eminent people graduated from the university than any other grouping. Apparently a university degree was more likely to help a person achieve eminence than not having a degree, but the degree of eminence was not so affected by the length of schooling.

Table 4. Eminence and university attendance and graduation.

Rank	University graduates		Attended university but did not graduate		No university training	
	number	percentage	number	percentage	number	percentage
First rank (n = 15)	2	14%	8	57%	5	29%
Second rank (n = 62)	26	47%	20	36%	16	17%
Third rank (n = 185)	61	37%	60	37%	64	26%
Fourth rank (n = 113)	38	34%	33	29%	42	37%

What kinds of elementary schools produced eminent men? What kinds of parishes? This kind of information was sought by looking at individual parishes and here we attempted to get a random selection of non-contributing parishes for comparison. This is discussed in the next part of the report.

IV - FINDINGS: PARISH

Several factors are said to have contributed to the appearance of so many eminent men in eighteenth-century Scotland. The population was increasing, there was a general rise in prosperity as well as a change in the nature of the economy, and there were of course innovations in primary education. Did any single one of these factors contribute more than the other to the Scottish "Renaissance" or can one be separated from the other? To look at this problem in some detail a total of 246 parish units were sampled, or approximately 25 per cent of the 938 which were known to have existed in eighteenth-century Scotland. Although the parish was a religious unit, for elementary educational purposes it was also a political unit, and most of the available statistics for eighteenth-century Scotland are for parish units. Some parishes, however, included burghs, either royal or ducal, which were self-governing communities. Many of the burghs had burghal schools, that is they were under control of the town government, although most of the smaller burghs depended upon the parish school or had a collaborative arrangement between the parish and the burgh. Parish schools were run by the heritors, i.e. the landowners, of the parish. Within the sample, 197 (80 per cent) were parish units while 49 (20 per cent)

were listed as burghs or burghal parishes, that is the parish either had a self-governing burgh within its boundaries or it was encompassed within a burgh.

The sample of parishes includes both contributing and non-contributing ones, although it is heavily weighted towards those that contributed. Contributing parishes are defined as such because there was someone of eminence who either was born or received his primary education within the parish. Thus they included all of the identifiable parishes where the sample of achievers in this study were born or studied. Contributing parishes were further broken down into those in which eminent individuals were born and those in which they were educated. Non-contributing parishes were selected at random from the various volumes of the Statistical Account of Scotland published at the end of the eighteenth century. The breakdown is as follows: 72 (2 per cent) non-contributing; 174 (71 per cent) contributing, of which only 104 (42 per cent of the total sample) had people educated in them. The non-contributing parishes act as a control group so that comparisons can be made with the contributing ones.

GENERAL PICTURE OF THE PARISH: POPULATION

Scotland had semi-official but more or less accurate censuses in 1755 and 1790, official censuses in 1801, and at ten-year intervals thereafter. Although not as complete

as the 1831 official census, the eighteenth-century tabulations are remarkable for their era. The median size of the sample parish in 1755 fell in the range 1000 to 1499 persons, and could be estimated at about 1350 people. In the 1790 census (which is included in the Statistical Account), the median size fell within the same range but was much closer to 1500 people. In 1831 the median size fell in the range 2000 to 2499 and was fairly close to 2500 people.

It is evident from our sample that achievement did have something to do with parish size. Using the 1755 census as a base there was a significant number of eminent men born or educated in burghs as distinguished from parishes. In Table 5, where the comparison between burghs and parishes is shown, the areas are also categorized by the number of eminent men

Table 5. Number of eminent men born in burghal parishes as compared to non-burghal parishes (n = 244).

Number of Eminent Men	Burghs	Parishes
None	14% (n = 7)	33% (n = 64)
One	43% (n = 21)	54% (n = 105)
More than one (2 to 74)	43% (n = 21)	13% (n = 26)
	100%	100%

they produced (none, one, and more than one). The separation between areas which produced more than one eminent man from those which produced only one was made because it seemed possible that a less favorable environment might accidentally give rise to one eminent person but was not likely to produce several.

Table 6. Number of eminent men educated in burghal parishes as compared to non-burghal parishes (n = 244).

Number of eminent men	Burghs	Parishes
None	27% (n = 13)	65% (n = 127)
One	33% (n = 16)	31% (n = 61)
More than one (2 to 74)	41% (n = 20)	4% (n = 7)
	100%*	100%

Chi Square = 59.23, two degrees of freedom; $p < .001$.
* Percentages are rounded off.

Tables 5 and 6 indicate the distinction between birthplace of the eminent men and the parish or burgh of education. In both cases the burghs contribute all out of proportion to their numbers, but particularly when education alone is considered. Figuring the percentages in a different way, burghal parishes amount to 74 per cent (20 out of 27) of those parishes which educated two or more of the eminent men in-

cluded in the sample, yet only 45 per cent (21 of 47) of the parishes which were the birthplaces of two or more of the sample group. One of the conclusions which might be drawn from these statistics is that the area in which the subject was educated was a more influential factor in determining eminence than the area in which he was born.

In part, however, this might be due to the fact that the burghal parishes were larger than the non-burghal ones. Using the 1755 population figures, in Tables 7 and 8, the same type of distribution appears although the larger parishes seem to loom even more important than those with burghal status. This is in part due to the fact that many of the parishes with burghal status dated from medieval times, some of them in the eighteenth century had little more than the title of burgh, and were in fact almost decaying villages. Most of the parishes with 2000 or more population, however, were large enough to maintain some semblance of an elementary school. In effect, those born or educated in the larger parishes were more likely to achieve eminence.

Did the population increase taking place in the eighteenth century contribute to eminence? The answer is not enough to be statistically significant. The reason for this is readily apparent. Parishes which contributed eminent individuals were already at the beginning of the century larger than the average parish and considerably more compact. Unless a parish had reached a certain size it was not likely to contribute eminent

Table 7. Population of parish in 1755 cross tabulated with the number of eminent men born in the parish (n = 246).

Number of eminent men	Population	
	Under 2000	2000 or over
None	34% (n = 61)	15% (n = 10)
One	55% (n = 100)	40% (n = 26)
More than one (2 to 74)	11% (n = 20)	45% (n = 29)
	100%	100%

Chi Square = 34.78, two degrees of freedom: $p < .001$.

Table 8. Population of parish in 1755 cross tabulated with the number of eminent men educated in the parish (n = 246).

Number of eminent men	Population	
	Under 2000	2000 and over
None	67% (n = 121)	31% (n = 20)
One	29% (n = 52)	40% (n = 26)
More than one (2 to 55)	4% (n = 8)	29% (n = 19)
	100%	100%

Chi Square = 39.60, two degrees of freedom: $p < .001$.

men, but once a particular size was reached, eminence seems to be more strongly correlated with population than with the rate of growth. Although the growing parishes contributed an increasing number of eminent people, they did so in proportion to their size. However, not all parishes were growing in population. In the total sample some 60 parishes (24 per cent) decreased in population over the last half of the century (between 1755 and 1790) while 38 (15 per cent) remained more or less static. In effect the larger parishes, those most likely to grow in population, were also the ones most likely to contribute people of eminence. This becomes even more apparent when only those parishes which contributed people of first rank eminence are considered. Some eight parishes, six of them classed as burghs, contributed people of first rank, and all of the eight were growing in population and were fairly compact in area.

THE ECONOMY OF THE PARISH

If the population increase was not a statistically significant factor in contributing eminent individuals, and yet a certain sized parish was significant, then the nature of the economy might be important. To test this hypothesis, the economy of the parishes was categorized into seven different groupings: (1) maritime (fishing) with some agriculture, (2) unimproved agriculture or pastoral, (3) partly improved (i.e. modernized) agriculture, (4) completely improved ag-

riculture, (5) some industrial and commercial interests which furnished goods for shipment out of the parish but still primarily agricultural, (6) major industrial or commercial enterprises but still with significant agriculture, and (7) primarily industrial and/or commercial. It was hypothesized that most of the eminent men would come from parishes with industrial or commercial interests or from completely improved agricultural ones. On the other hand, it was assumed that few eminent men would come from unimproved agricultural areas or from the maritime areas which were primarily fishing villages. In fact this turned out to be the case. In order to test the relationship of the economy to eminence, parishes again were categorized as either non-contributing, as contributing one person, or as contributing two or more eminent men. Computations were made both in terms of the parish in which the individuals were born and those in which they were educated. While both computations tended to emphasize the same factors, for the purpose of this report the parish of education is the only table given, because it seemed to be the more significant.

Table 9 tends to support the general thesis of urbanization so apparent in the population figures. The table, however, also emphasizes the importance of prosperity, innovations in farming techniques, and industrialization, since it indicates that the improved agricultural parishes as well as the industrial and commercial parishes were significant contributors.

Table 9. The economic classification of the parish cross tabulated with the number of eminent men educated in the parish (n = 243).

Number of eminent men	Maritime	Unimproved Agriculture	Partially improved agriculture	Improved Agriculture	Agriculture with some industry & commerce	Industrial commercial with some agriculture	Primarily industrial commercial
None	64% (n=25)	56% (n=18)	71% (n=54)	55% (n=12)	58% (n=23)	29% (n=8)	— (n=0)
One	28% (n=11)	44% (n=14)	25% (n=19)	27% (n=6)	35% (n=14)	43% (n=12)	— (n=0)
More than one (2 to 55)	8% (n=3)	— (n=0)	4% (n=3)	18% (n=4)	8% (n=3)	29% (n=8)	100% (n=6)
	100%	100%	100%	100%	100%	100%	100%

Chi Square = 75.59, with 12 degrees of freedom: $p < .001$.

The mere beginnings of industrialization, moreover, were not so important as basic agricultural improvements since those parishes with only some industry and commerce with still largely unimproved agriculture were not as significant contributors as the completely improved agricultural parishes or those parishes with much more industry and commerce. Like population then, the economic changes taking place in Scotland are undoubtedly important, but their effect is more long term than short term. If industrialization continued, if commerce

achieved marked growth, and if agricultural improvement was intensified, the parish would be likely to contribute eminent men, but at the beginning stages of this process, no immediate improvement is apparent in the sample parishes.

PROSPERITY

Though it would seem obvious that the richer parishes would be the more commercial and industrialized ones or those showing great agricultural innovation, it was felt that some objective way of measuring actual wealth within the parish was needed. This seemed to be a difficult task in a period when such modern measures as the Gross National Product were nonexistent. Moreover, it was important that the measure be applied equally to rural parishes as well as to urban parsihes, with as objective a standard as possible. After considerable research it was decided that one of the best criteria of the wealth of the parish was the salary that the parish paid the minister, or in case of those parishes with more than one minister or church, the salary of the highest ranking minister. Ministers in eighteenth-century Scotland were an elite group. In some of the rural areas, for example, the minister's salary was ten times as much as the schoolmaster, one of the few other paid people in the parish. Ministers ranked higher in social status and salary than the physicians, who were probably next in occupational prestige to ministers, although lawyers were nearly at the same level as physicians.

In cities like Edinburgh there were undoubtedly some physicians or lawyers who made more than any minister, but on an average over the entire country the ministers were more prestigious and more prosperous. Though the minister's salary was often paid in kind in some of the rural parishes, there was usually a cash value assigned to it. For purposes of reporting the salary scale in Table 10 was compressed into two categories: 75 pounds and under, and over 75 pounds, though some ministers earned more than twice this.

Table 10. Salary of ministers in 1790 tabulated with the number of eminent men born in the parish (n = 224).

Number of eminent men	Salary: 75 pounds sterling and under	Salary: Over 75 pounds sterling
None	29% (n=30)	31% (n=37)
One	61% (n=63)	46% (n=55)
More than one (2 to 74)	11% (n=11)	23% (n=28)
	100%*	100%

Chi Square = 7.58, with 2 degrees of freedom: $p < .02$.
* Percentages rounded off.

As expected those parishes which paid 76 pounds sterling or more contributed a significant number of distinguished in-

dividuals, although the ratio was not as high as anticipated. If the minister's salary was an effective indication of prosperity, and we think it was, prosperity in itself cannot account for the number of eminent people produced in Scotland.

It was also hypothesized that those parishes which had more than one church or collegiate churches (those with more than one minister) would be more likely to contribute eminent men. In effect this could be another way of determining the prosperity within the parish although it might only be an indication of urbanization. The overwhelming majority of the sample parishes had only one established church (196 or 80 per cent) and we were unable to find the necessary information on twelve parishes (5 per cent). On the other hand, nine parishes (4 per cent) had more than one church but only one minister, an indication either of a declining parish or of one which was geographically very large. Some 16 parishes (7 per cent) had collegiate churches, and 13 (5 per cent) had more than one established church. A surprising 68 (28 per cent) had meeting houses, congregations, or organized churches, of other than the established Presbyterian Church. In terms of education those parishes with either collegiate churches or more than one established church were more likely to produce eminent men (Chi Square = 23.11, with 2 degrees of freedom, $p < .001$). Similarly, those parishes which supported meeting houses or congregations of dissenters were also more likely to be the home of eminent men (Chi Square = 15.6319, with 4 degrees of freedom, $p < .01$).

HERITORS AND THE PARISH SCHOOL

By law the responsibility for establishing a school in the parish lay in the first instance with the heritors (the property owners) in the parish. The number of heritors varied from parish to parish; in some there was only one heritor, while in others there were several major heritors, and in a few there were numerous small heritors. Schools in the burghs were the responsibility of the town council although in the majority of the burghs there was a cooperative effort between the town government and the parish heritors. Thus even in the burghs, the heritors become an important factor. Some 22 parishes (9 per cent) had one heritor, another 12 (5 per cent) had two, while 120 (48 per cent) had six or more heritors. It was hypothesized that those parishes which had a larger number of heritors would be more likely to produce eminent men than those with a single heritor since in effect more people living in the parish would have a vested interest in establishing a parish school if only for their own children or those of their relatives. While there was an occasional single heritor who had a commitment to education, the majority did not. Moreover, most single heritors were absentee owners, and even if they lived in the parish, they were as likely to hire a tutor for their own children as to tax themselves for the support of a parish school. In part this hypothesis worked out but it had some interesting connotations. Those parishes with six or more heritors were

more likely to be the birthplace of eminent people (Chi Square = 8.24, with 2 degrees of freedom, $p < .02$), but the significance was not as high as expected. When the parish of education is considered instead of parish of birth, there was even less of a difference. Apparently those of the sample born in parishes with larger number of heritors were more likely to be eminent, perhaps because they were more likely to come from the higher income families (i.e. those of the heritor), but a large number of heritors provided no guarantee that the school would produce eminent men in any greater proportion.

V - FINDINGS: PARISH SCHOOLS

Most of the sample parishes had some kind of school. Of the 246 parishes only 16 (7 per cent) definitely had no parish school although there were 27 (11 per cent) about which we were unable to find this information. Some 76 (31 per cent) had only one parish school, probably an English school, that is instruction was in English, and English grammar, writing, and simple arithmetic, were the standard courses of instruction. Somewhat unexpected was the fact that some 62 parishes (26 per cent) had a Latin or a grammar school in which the students were also officially taught Latin. This type of school must be classed at a somewhat higher level than a simple parish school. A total of 47 parishes (19 per cent) had more than one school.

It was hypothesized that those schools which had reformed their curriculum by introducing "modern" subjects such as algebra, navigation, trigonometry, surveying, accounting, bookkeeping, modern languages, and so forth, would contribute a greater number of eminent men in proportion to their population than those parishes which had not reformed their curriculum. Unfortunately, it was impossible to find just when such subjects were introduced in the vast majority of parish schools, or even whether such subjects were taught in the eighteenth century. As a result so many schools had

to be classed as unknown in this respect that no meaningful data emerged. Instead we attempted to get at the same kind of information through another kind of measurement. Though many of the parish schools undoubtedly had single teachers who attempted to teach "modern" subjects such as navigation or surveying in addition to the English grammar, writing, and simple arithmetic, the better schools tended to try to add special teachers in these subjects. Schools with more than one teacher are called collegiate schools and 27 parishes (11 per cent) had one or more collegiate schools. The importance of the collegiate schools in the education of men who achieved eminence is evident from Table 11.

Table 11. Collegiate and non-collegiate schools tabulated with the number of eminent men educated in the parish (n = 194).

Number of eminent men	Type of School	
	Non-collegiate	Collegiate
None	65% (n = 108)	11% (n = 3)
One	31% (n = 52)	33% (n = 9)
More than one (2 - 55)	4% (n = 7)	56% (n = 15)
	100%	100%

Chi Square = 65.76, with 2 degrees of freedom, $p < .001$.

In effect only three parishes identified as having collegiate schools failed to produce eminent men. Put another way, 89 per cent of those parishes identified as having collegiate schools produced eminent men, while only 35 per cent of those parishes without a collegiate type school did.

In many of the parishes where formal instruction in some of the specialized subjects was not included in the curriculum of the local school, a number of private teachers appeared. These private teachers could be identified in at least 62 parishes (25 per cent). In many of the burghs, such as Glasgow, private teachers were given a subsidy by the Town Council. If those parishes in which we are certain there were private teachers are compared with those where we have not been able to identify them we also end up with a significant correlation with eminence (Chi Square = 6.20, with 2 degrees of freedom, $p < .05$).

It appears obvious that simply an increase in the number of teachers at the elementary level seems to have been an important factor in intellectual achievement in eighteenth-century Scotland. This increase in teachers, and the growth of collegiate type schools, allowed for more specialized instruction, and teacher specialization in itself both at the elementary level and the university level seems to be a very significant factor in the rise of so many Scotsmen to eminence.

Since large areas of Scotland in the eighteenth century

were either too sparsely populated or too poor to establish parish schools or unwilling to support one, special charity schools came to be established in many areas, particularly through the efforts of the Society in Scotland for the Propagating of Christian Knowledge. This Society, founded in 1709, was separate from the Church of Scotland, but it enjoyed the help and sympathy of the General Assembly of the Church. At first it was primarily concerned with eradicating Gaelic-speaking Catholics and its emphasis was on reading the Bible in English. As a result, the Society at first refused to teach in Gaelic; its period of greater success came after the middle of the century when it recognized the need to teach in Gaelic and English. Gradually the Society perfected its plan of actions and increasingly demanded that parishes in which SPCK schools were located also contribute to the support of parish schools. In 1738 the Society was given a second charter which also enabled it to establish spinning schools and its program became more vocationally oriented. In 1752, the Society joined with the Commission for the Forfeited Estates in establishing schools in those areas which had been the hotbeds of support for the Rebellion of 1745, in support of the pretender, Prince Charles Edward. In spite of the efforts of the Society to establish schools, most of the SPCK parishes in the sample turned out to be non-contributing ones. In fact parishes with other types of charity schools such as hospitals and

workhouses were more likely to contribute eminent men than the SPCK parishes. This might be explainable in terms of a rural versus urban population since the hospitals and workhouses with their attached schools were more likely to be in urban parishes where educational opportunities were already more plentiful. Moreover, the hospitals and workhouses were more likely to be better endowed than the SPCK schools. This was in part because the Society tried to stretch its resources in order to establish as many parish schools as possible, a laudable aim, but if the findings in this study have any validity, it would seem to indicate that concentration of resources (when they are limited as they were in eighteenth-century Scotland) would seem more likely to produce eminent men. The failure of the SPCK parishes to produce any significant numbers of eminent men is, nonetheless, understandable, and from the other results in the study more or less predictable. Eminence seems to be the result of a several-generation process, and when education is only beginning, as it was in most of the SPCK parishes, the results cannot be expected to appear for several generations.

Though almost every specialist in educational matters will agree that high teacher's salaries are not always a guarantee of good teaching, it can still be argued that adequate salaries for teachers tend to facilitate recruitment of better teachers. A hypothesis of this study was that

the rising salaries for teachers in eighteenth-century Scotland would serve as an enticement to attract better qualified candidates and lead to more effective teaching. It should be kept in mind, however, that salaries for teachers, even at best, were not comparable to those of ministers or to other developing professional groups. Only one parish paid teachers a salary over 59 pounds annually, while 71 parishes (29 per cent) paid less than ten pounds. In the case of another 89 (36 per cent) it was not possible to determine the salaries of teachers but they probably could be classed as under ten pounds. Excluding the unknown parishes, and making a break at ten pounds, the relationship of high teacher's salary to eminence is a significant one (Chi Square = 6.54, with 2 degrees of freedom, $p < .05$). In effect, even in eighteenth-century Scotland, it would seem that the parishes received the kind of education that they were willing to pay for.

VI - CONCLUSIONS

The findings of the study are obviously deserving of a book broken down into chapters on each separate subject, and including much more detailed analysis than is possible in such a report as this. Even in this comparatively brief summation, however, it seems obvious that education played a significant role in the Scottish Renaissance of the eighteenth century. Though the industrialization and agricultural innovation were important, it seems that the most significant factor was education, although developments in this field were in part dependent upon the growth of general prosperity in the country. The gradual increase in the number of parish schools tended also to increase the likelihood that a particular parish would produce an eminent man, but even more important than the appearance of new parish schools was the growth of educational specialization and the subsequent increase in the number of teachers. Since specialization in part implies the introduction of new subject matter, it can perhaps be assumed that curricular innovation also played an important part in the increase in men of eminence although the detailed information on this could not be found in most parishes.

Even more important, and somewhat unexpected in the design of the research, was the importance of the university

and university education. If a historical study such as this has any merit in meeting contemporary problems of underdeveloped peoples and areas, it would seem that reforms at all levels of education have to be carried out, from the elementary school to the university. Though it seems obvious to the observer of today's educational problems, that university education is important, it was not expected that universities would loom so important in the eighteenth century. Moreover, the eighteenth century university education tended to enable people to cross class lines so that even those eminent people who were not born into the upper middle class tended to move into this grouping.

The study also seemed to demonstrate that eminent men are not likely to be produced overnight. The mere establishment of the SPCK schools in some of the poorer areas in Scotland did not produce a noticeable number of eminent men in these areas. This obviously fits in with other observable patterns in the study, namely that intellectual achievement takes several generations. While there are always some exceptions to the rule, eminence in eighteenth-century Scotland seems to have resulted when the families of the eminent men themselves had acquired a certain degree of education and standing. If the study had been extended into nineteenth-century Scotland, it seems certain that some of the parishes in which there were major educational reforms

but which had not yet produced eminent men would probably do so. The amount of time and effort necessary to produce such a study, however, would be much greater than in the eighteenth century because of the increase in population, the proliferation of source materials, and the widespread dispersion of eminent Scots throughout the whole of the British Empire. A high percentage of eighteenth-century eminent men remained in Scotland during the period under study, but as the nineteenth century advanced, increasing numbers moved to London or elsewhere. In fact the very mobility of the nineteenth-century Scot makes such a study as this almost a lifelong project. Instead it might be possible to replicate this study in other countries at other periods such as Italy in the fifteenth and sixteenth century (particularly Florence and Venice), the Netherlands in the seventeenth century, or to study the German Jews in the nineteenth century.

In conclusion, it seems that a significant reason for the rise of Scotland to a position of intellectual eminence is its educational system and educational innovation. Though urbanization, prosperity, and the union with England are important, as is the incipient industrial revolution, these paid the greatest dividends when some of the new sources of revenue were applied to the expansion of the school system, and to encouraging the growth of specialized teaching both in the elementary school and in the university. Those areas

which did not invest in their educational system were less likely to produce eminent men, while those that did use some of their new-found prosperity to support education produced a significant proportion of the eminent Scots in the eighteenth century.

APPENDIX I

Individual Information Sheet

Name_____Dates_____DNB_____

Place of birth_____L I Raised by_____

Place of rearing_____Siblings (number)_____ Place in family_____

Religion_____

Social Class:_____

Father's occupation_____Income_____

Mother's background_____

Place of Schooling Names of Schools Teachers or Tutors

College or Univ. Time Spent There Degree Subjects & Teachers

Subject's occupation and appraisal of social standing (titles, income, place in upper class society)

When married:_____To whom_____

Social class of spouse_____

Accomplishments:

Country of success_____Lawbreaking_____

Children of subject: (Names, number, reputation)

APPENDIX II

Parish Information Form

Parish of_____County of_____

Population: 1755_____1790's_____1801_____

Remarks:

Economy: Basic economic activity_____

Agriculture: type, improvements, etc.

Industry, commerce, etc.

Churches: Established, Patron_____Stipend of minister____

_____

Others:

Schools: Parish_____

_____No. of masters_____

Master's salary_____

Private schools_____

High schools_____

Remarks: